

From Peritoneal Dialysis to Hemodialysis How could we improve the transition ?

Th Lobbedez

CHU de Caen

Self Dialysis Meeting

22 May 2014

Deux grands principes concernant la DP

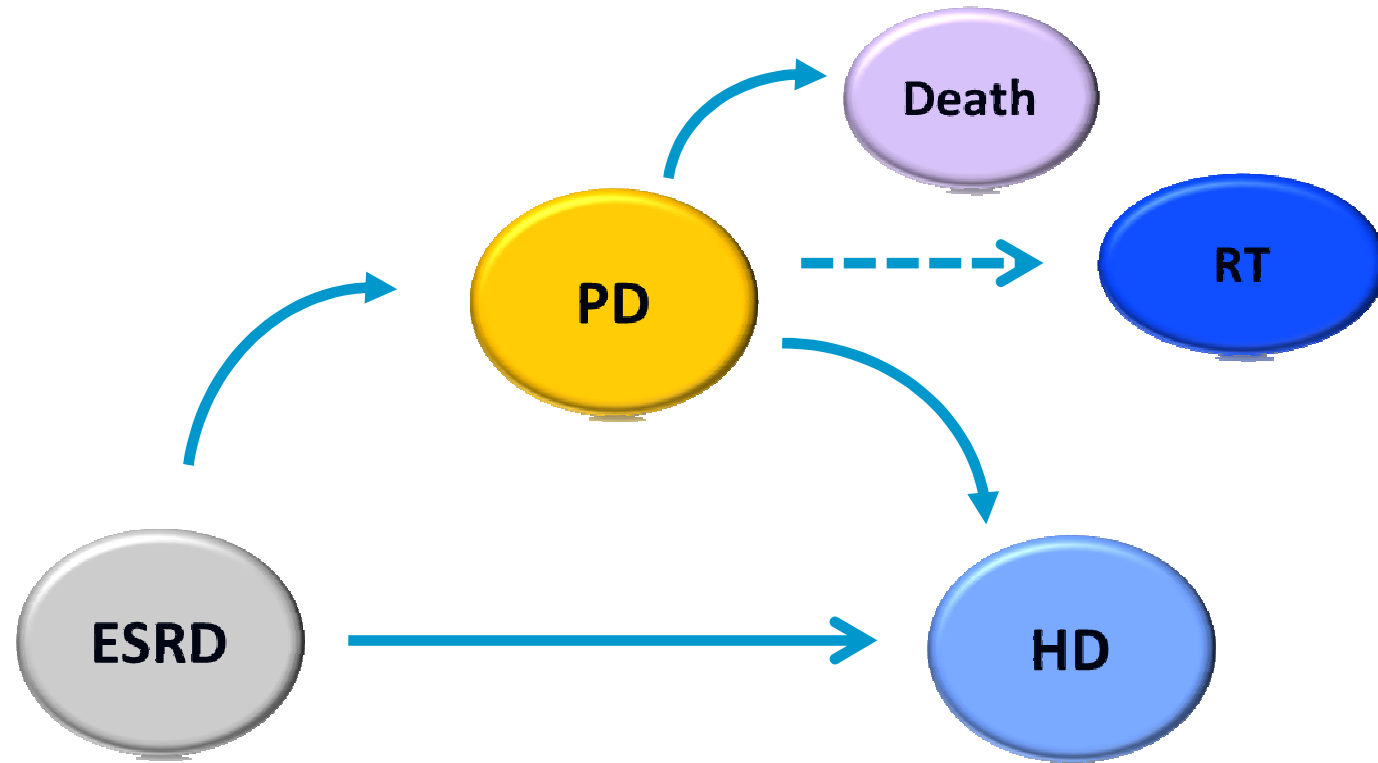
- **“La dialyse péritonéale doit être considérée comme une méthode de traitement de première intention”**

[Pr J-Ph Ryckelynck, Réunion régionale de dialyse ,1993]

- **“La dialyse péritonéale en première intention c’est bien mais il faut pouvoir en sortir”**

[Pr Michel Godin, Réunion Régionale, 1993]

PD: a temporary period within the trajectory

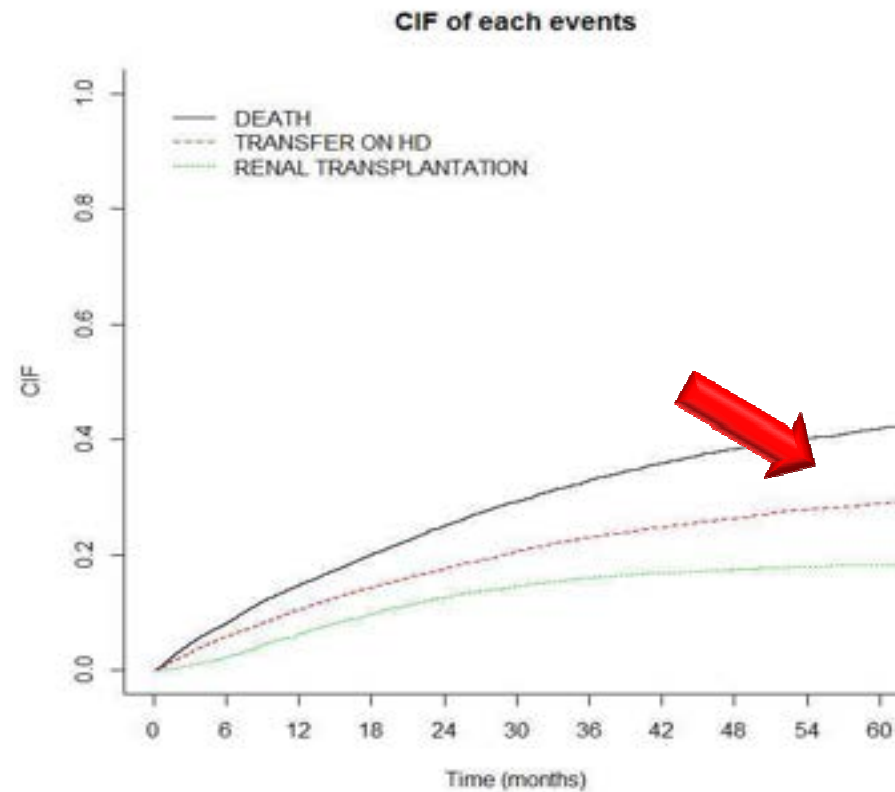


The transfer to HD should be considered for every patients entering on peritoneal dialysis



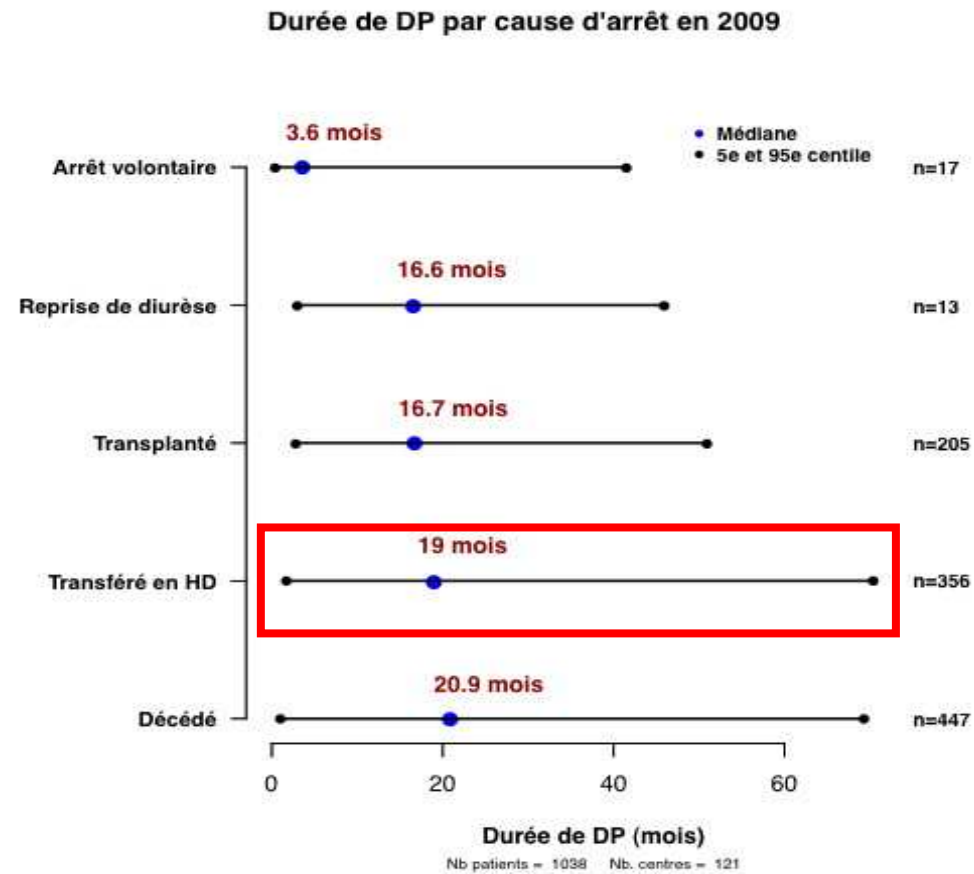
Transfer to Hemodialysis in France

Cumulative incidence of each outcome on PD
[n=9840 patients, data from the RDPLF]



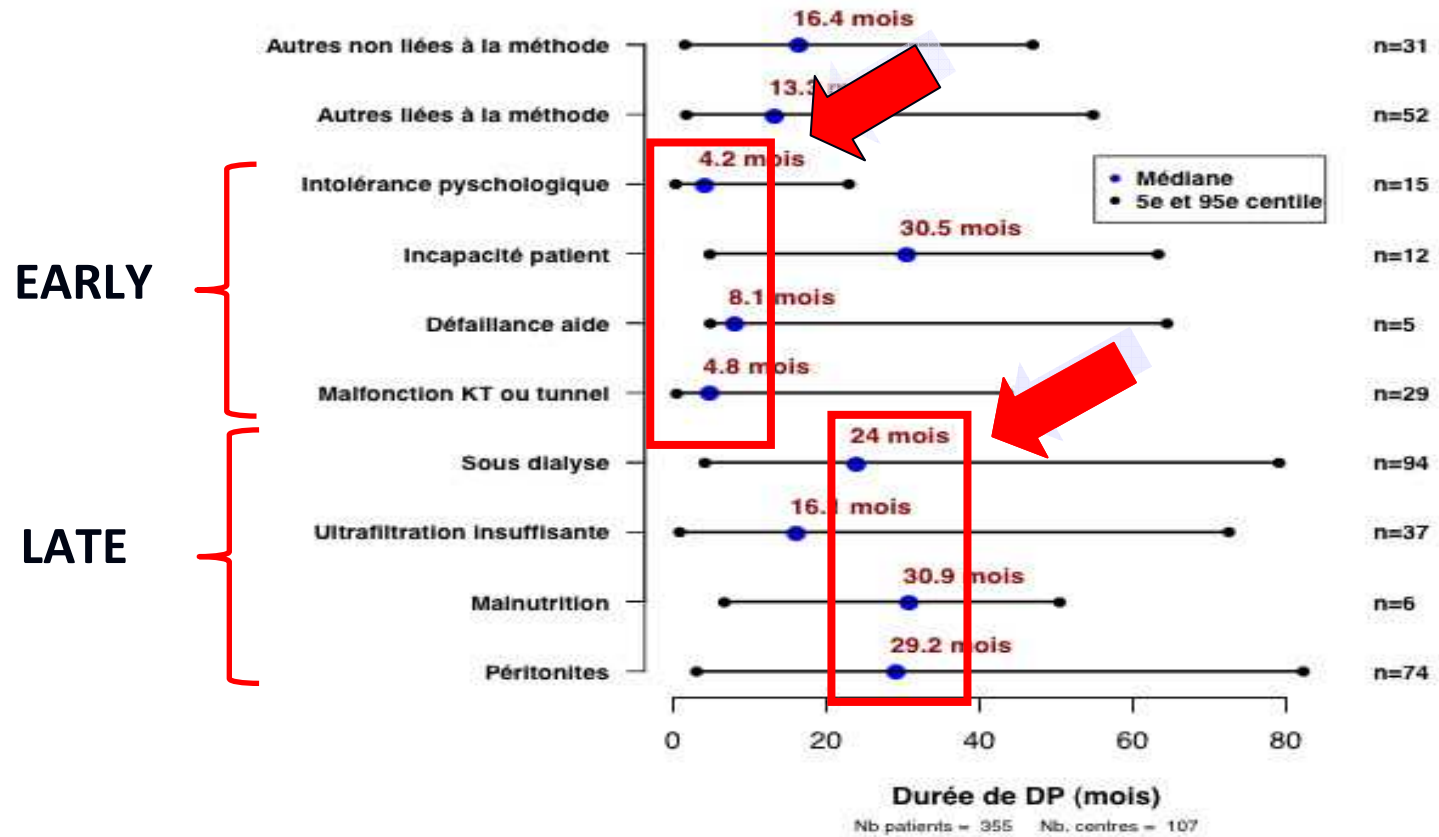
Peritoneal dialysis duration in France

Data from the RDPLF

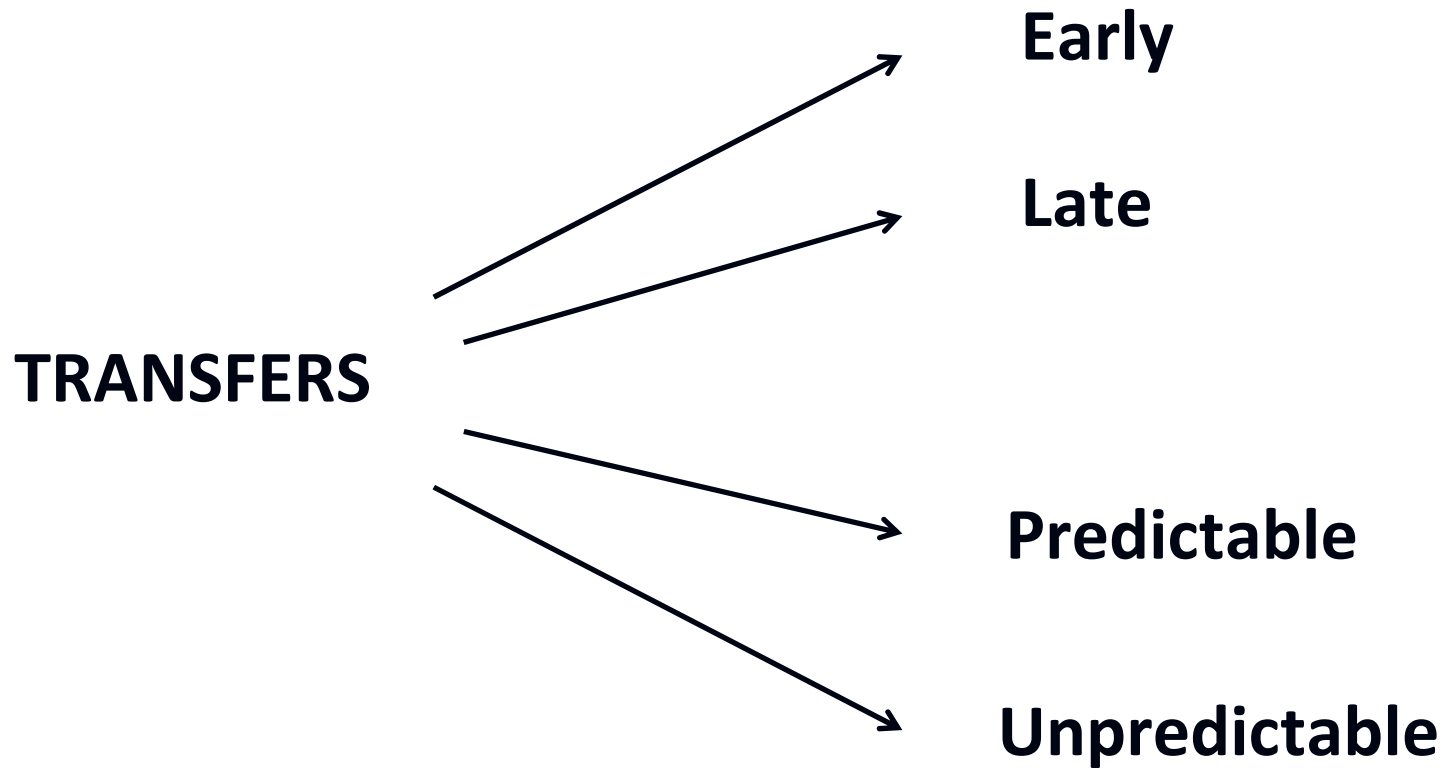


Causes of Peritoneal Dialysis cessation

Durée de DP par cause de transfert en HD en 2009



Type of transfer to hemodialysis



A preemptive transfer on HD is not recommended

Int Urol Nephrol (2009) 41:903–907

DOI 10.1007/s11255-009-9661-7

NEPHROLOGY - EDITORIAL

No need for an “expiry date” in chronic peritoneal dialysis to prevent encapsulating peritoneal sclerosis

Guido Garosi • Dimitrios G. Oreopoulos

How could we improve the transition ?

1. Criteria for the transfer to HD

RECOMMANDATIONS PROFESSIONNELLES

Indications et non-indications
de la dialyse péritonéale chronique
chez l'adulte

Consensus formalisé

Recommandations

Juin 2007

Transfer to HD: French recommendations

- Dialysis adequacy
- Peritonitis
- Abdominal wall complications
- Catheter dysfunction
- Metabolic
- Miscellaneous

[disponible sur www.has-sante.fr]

Transfer to hemodialysis for adequacy

International overview on dialysis adequacy

	Kt/V_{urea} (per week) Renal + peritoneal	C_{cr} (per week) Renal+ peritoneal
European Best Practice Guidelines 2005 ⁶	≥ 1.7	APD >45 L/wk for patients with frequent short exchanges and slow transport status
KDOQI (US) 2006 ³	≥ 1.7	N/A
ISPD 2006 ⁵	≥ 1.7	APD > 45 L/Wk
Canadian Society of Nephrology 1999 ⁴	≥ 1.7	N/A
CARI (Australia) 2005 ⁸	≥ 1.6	High/high average transport > 60 L/Wk Low/low average transport > 50 L/wk
UK Renal Association 2007 ⁷	≥ 1.7	≥ 50 L/wk
Spanish Soc of Neph Guidelines, Nefrología, 2006	≥ 1.7	wCrCl is 50L/w/1.73m ² in CAPD; 45 in APD low transporters

How to define dialysis adequacy ?

- Adequacy is estimated with small solute clearance
- APD is not similar to CAPD in terms of adequacy
- Residual renal function is a major contributor

- Patients with uremic syndrome despite a good Kt/V
- Patients are doing well with bad Kt/V
- Kt/V alone is not a good criteria for the transfer on HD

Ultrafiltration and sodium clearance

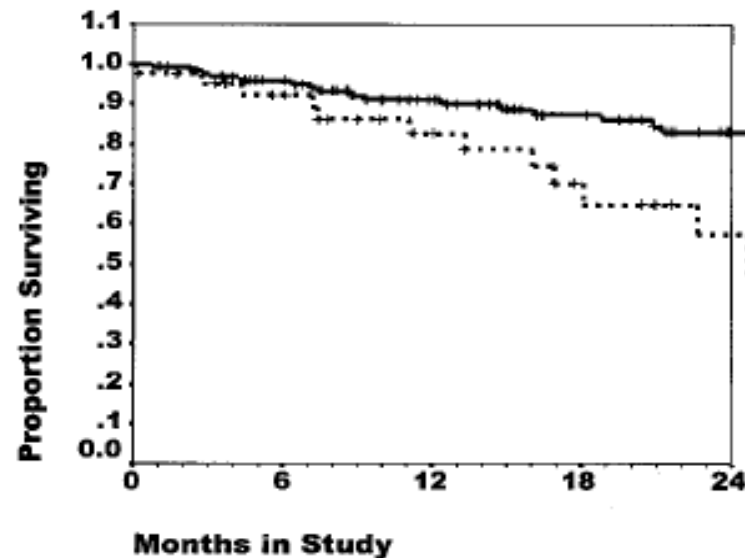
The Ates observational study

[Ates, Kidney Int 2001; 60:767-776]

Variables	HR [95%CI]
Comorbidites	1,65 (1,19-1,61)
Créatinine	0,69 (0,55-0,87)
Fonction rénale	0,53 (0,31-0,91)
Extraction sodée (10 mmol/j/1,73m)	0,90 (0,84-0,96)

The EAPOS observational study

[Brown EA, JASN 2003;14:2948-57]



- **UF > 750 ml/j in anuric patient**
- **UF > 250 in case of residual renal function**
- **To avoid negative UF**

[Canadian Society of Nephrology Guidelines and Recommendations 2011]

Peritonitis and transfer to hemodialysis

- More than 3 enteric peritonitis
- Recurrent peritonitis despite a new catheter
- Multiple peritonitis without explanation
- Fungal peritonitis

[Recommandations HAS 2009]

Refractory peritonitis and relapse linked to catheter biofilm should not be considered as a cause of definitive transfer to HD

Enteric peritonitis: a greater risk of transfer to HD

Data from the ANZDATA registry

Outcome	Pure enterococcal peritonitis (n = 64 episodes)	Polymicrobial enterococcal peritonitis (n = 52 episodes)	Non-enterococcal peritonitis (n = 3478 episodes)	P value
Treatment				
Change to second antibiotic regimen	38 (59%)	44 (85%)	1928 (55%)	<0.001
Time to second antibiotic regimen	3 [2–5.25]	3 [2–5]	3 [2–5]	0.4
Change to 3 rd antibiotic regimen	4 (6%)	20 (38%)	473 (13%)	<0.001
Time to third antibiotic regimen	7 [4.25–12.75]	6 [5–14]	6 [4–10]	0.5
Total antibiotic treatment duration	12 [7–18.75]	15.5 [12–28.75]	14 [8–20]	0.008
Uncomplicated by relapse, catheter removal or death	38 (59%)	21 (40%)	237 (68%)	<0.001
Peritonitis relapse	14 (22%)	3 (6%)	485 (14%)	0.04
Hospitalization				
Number (%)	48 (75%)	43 (83%)	2413 (69%)	0.08
Duration	4.5 [2.25–11.75]	13 [7–29]	6 [3–12]	<0.001
Catheter removal				
Number (%)	16 (25%)	27 (52%)	732 (21%)	<0.001
Time to occurrence	8 [5–16.75]	6 [3–10]	6 [3–13]	0.4
Temporary haemodialysis				
Number (%)	5 (8%)	2 (4%)	145 (4%)	0.4
Time to occurrence	6 [3.25–6]	5 [5–5]	6 [3–12]	0.9
Duration	26.5 [1–66.25]	77 [3–151]	68 [27–104]	0.2
Permanent haemodialysis				
Number (%)	11 (17%)	26 (50%)	598 (17%)	<0.001
Time to occurrence	12 [8–17]	6[4–11]	7 [4–13]	0.2
Death				
Number (%)	1 (1.6%)	3 (5.8%)	78 (2.2%)	0.2
Time to death	6 [6–6]	9 [1–15]	13 [3.5–24.5]	0.7

[M Edey, Nephrol Dial Transplant 2010; 25:1272-1278]

Metabolic complication and transfer to HD

- **Massive weigh gain on PD (> 15 % over one year)**
- **Triglyceride > 10 g/l**
- **Malnutrition without any explanation**

[Recommandations HAS 2009]

How could we improve the transition ?

2. From home therapy to home therapy

From PD to Home hemodialysis ?

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TRANSITIONS FROM PD ARE EXPECTED. WHY NOT CONTINUE AT HOME?

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THE USE OF NOCTURNAL HOME HEMODIALYSIS AS SALVAGE THERAPY FOR PATIENTS EXPERIENCING PERITONEAL DIALYSIS FAILURE

Joseph H.S. Wong,¹ Andreas Pierratos,² Dimitrios G. Oreopoulos,³ Reem Mohammad,³
Fatima Benjamin-Wong,³ and Christopher T. Chan³

Peritoneal Dialysis cycler



Home Hemodialysis



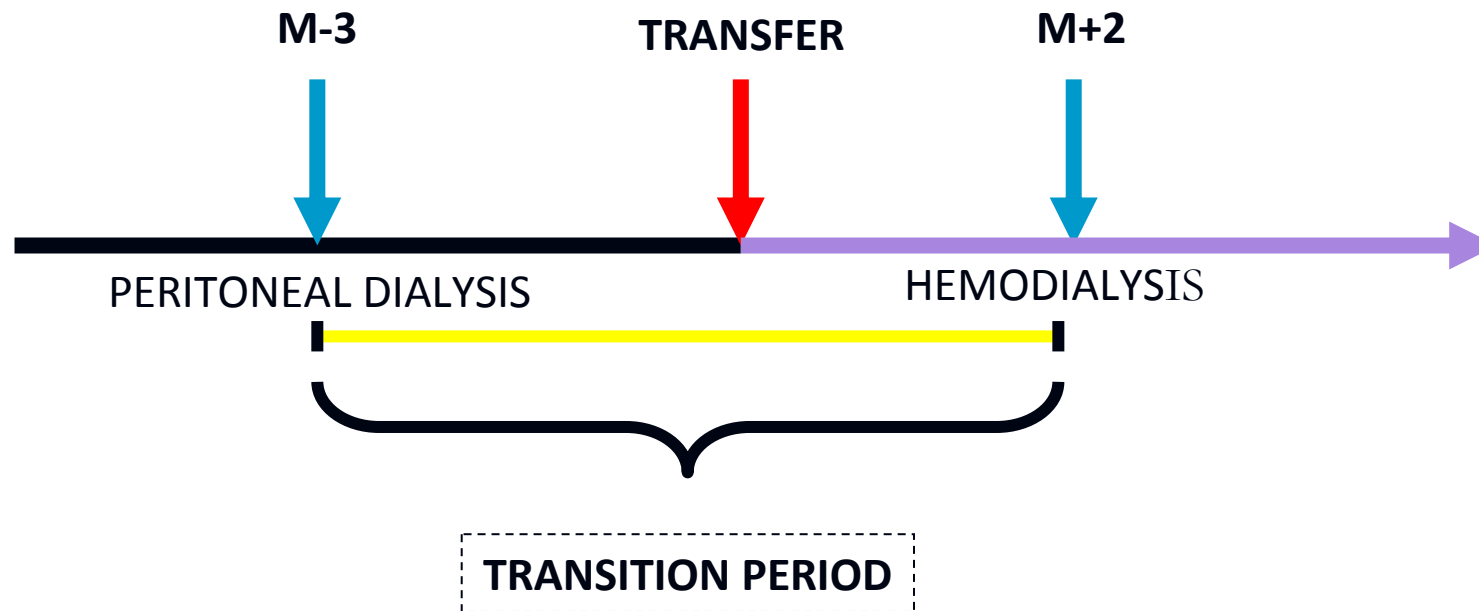
It looks great, but in this case transfer to HD must be a gradual process...

**IS TRANSITION BETWEEN PERITONEAL DIALYSIS AND HEMODIALYSIS
REALLY A GRADUAL PROCESS?**

Lucie Boissinot,¹ Isabelle Landru,² Eric Cardineau,³ Elie Zagdoun,⁴ Jean-Philippe Ryckelycnk,¹
and Thierry Lobbedez¹

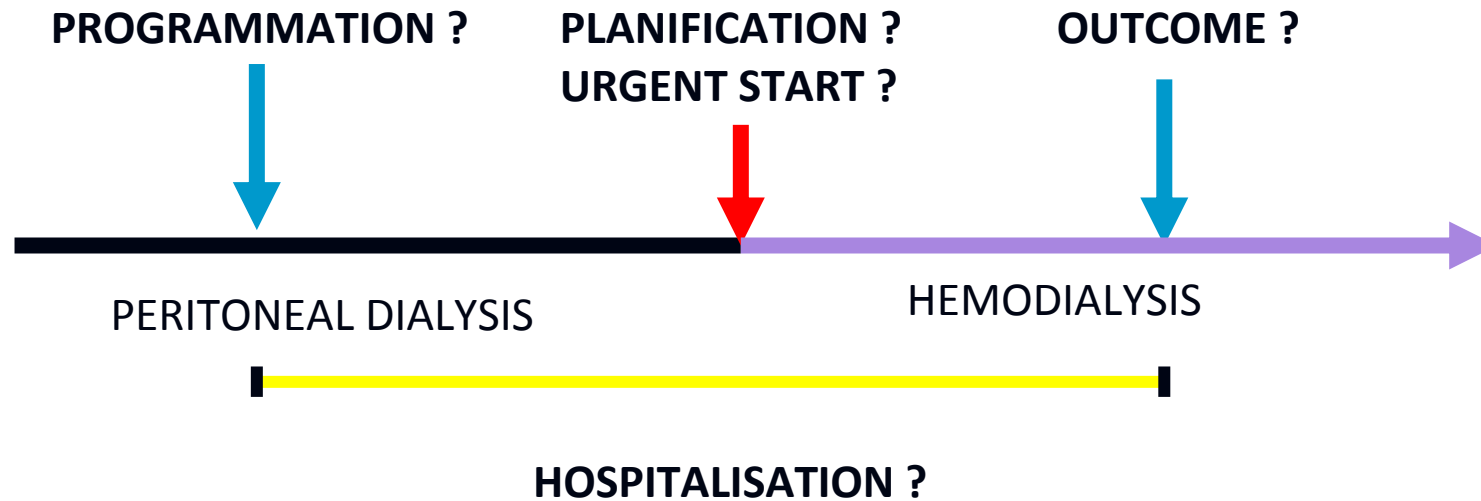
*Nephrology Department,¹ CHU Clemenceau, Caen; Nephrology Department,² CH Bisson, Lisieux; Nephrology
Department,³ CH Intercommunal, Alençon; and Nephrology Department,⁴ CH Memorial, Saint Lo, France*

Definition of the transition period



- **M-3: time for the maturation of the vascular access**
- **M+2: time which remains attributed to the previous modality**
- **Time[(M-3)-(M+2)]: transition period**

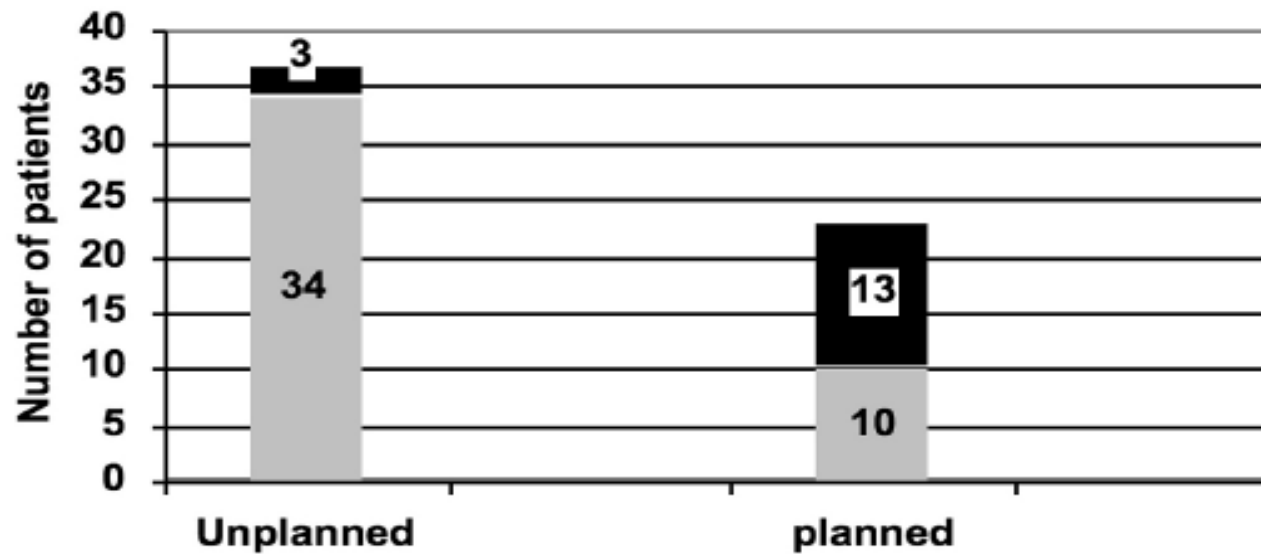
Definition of the events during the transition period



- **Unplanned transfer: through an HD catheter**
- **Urgent start on HD: acidosis, hyperkalemia, fluid overload**

Is transition really a gradual process ?

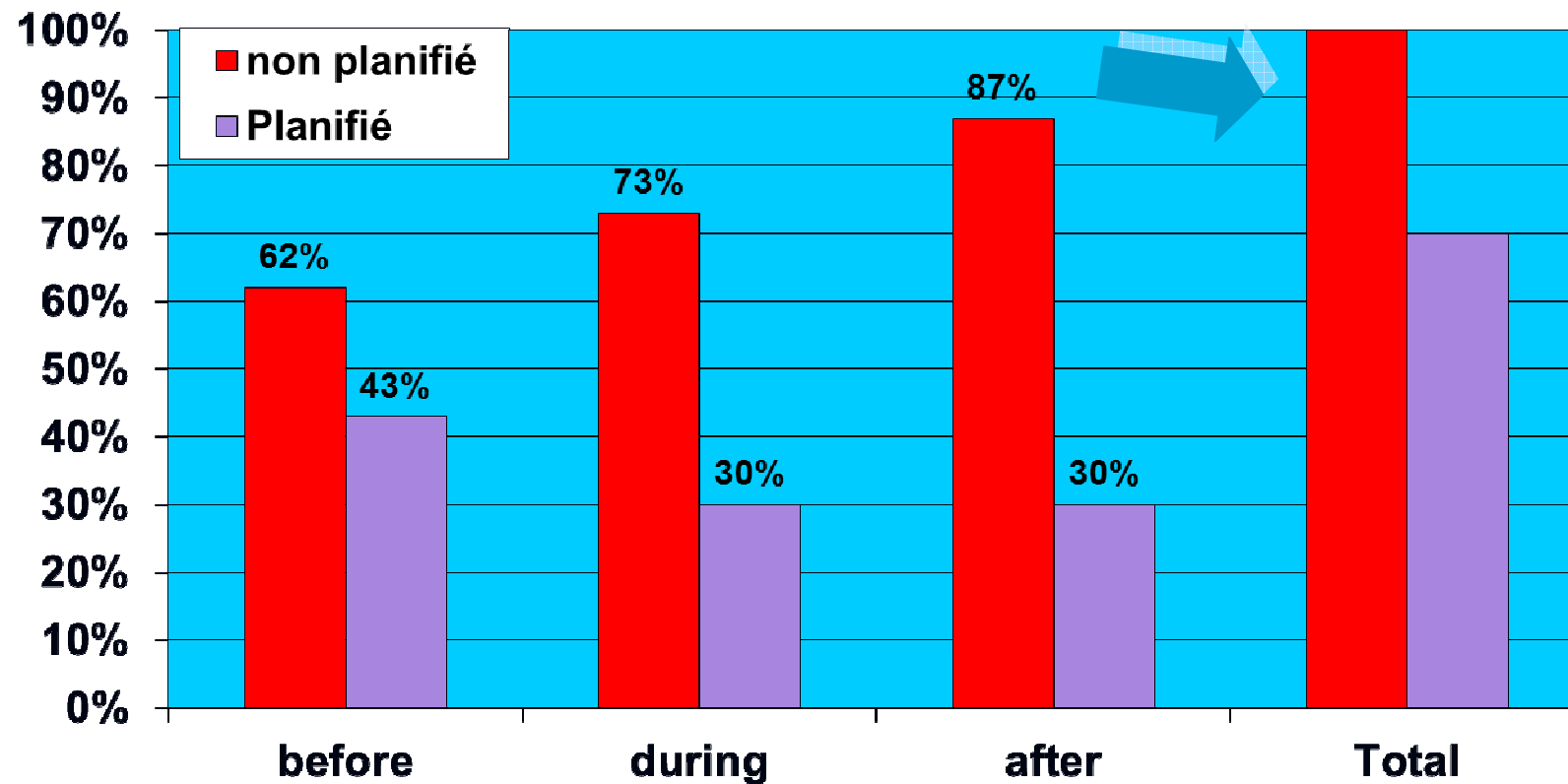
Unplanned start among the patients transferred to HD



[L Boissinot, Perit Dial Int, Epub in advance]

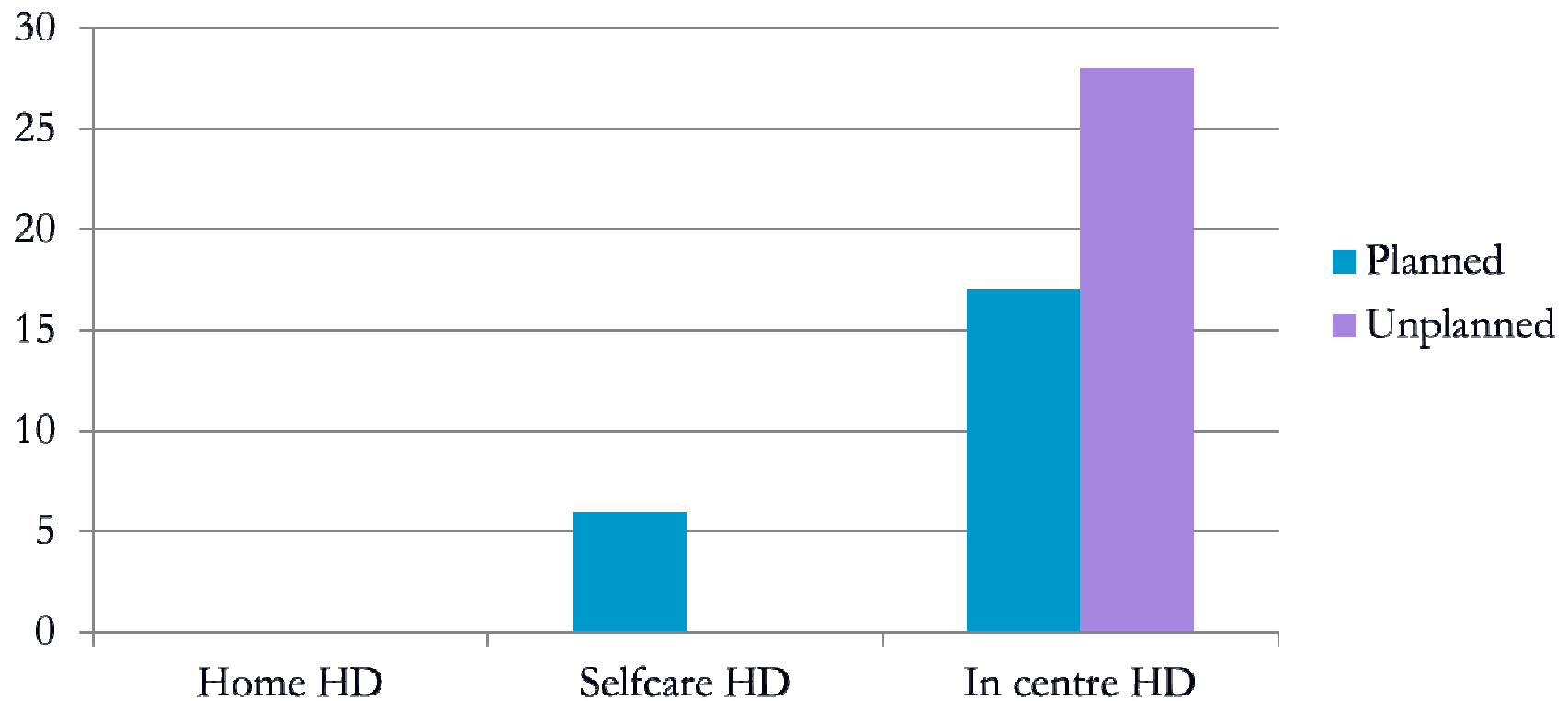
Impact of the transfer on hemodialysis

Hospitalization during the transition



Outcome on hemodialysis after transfer

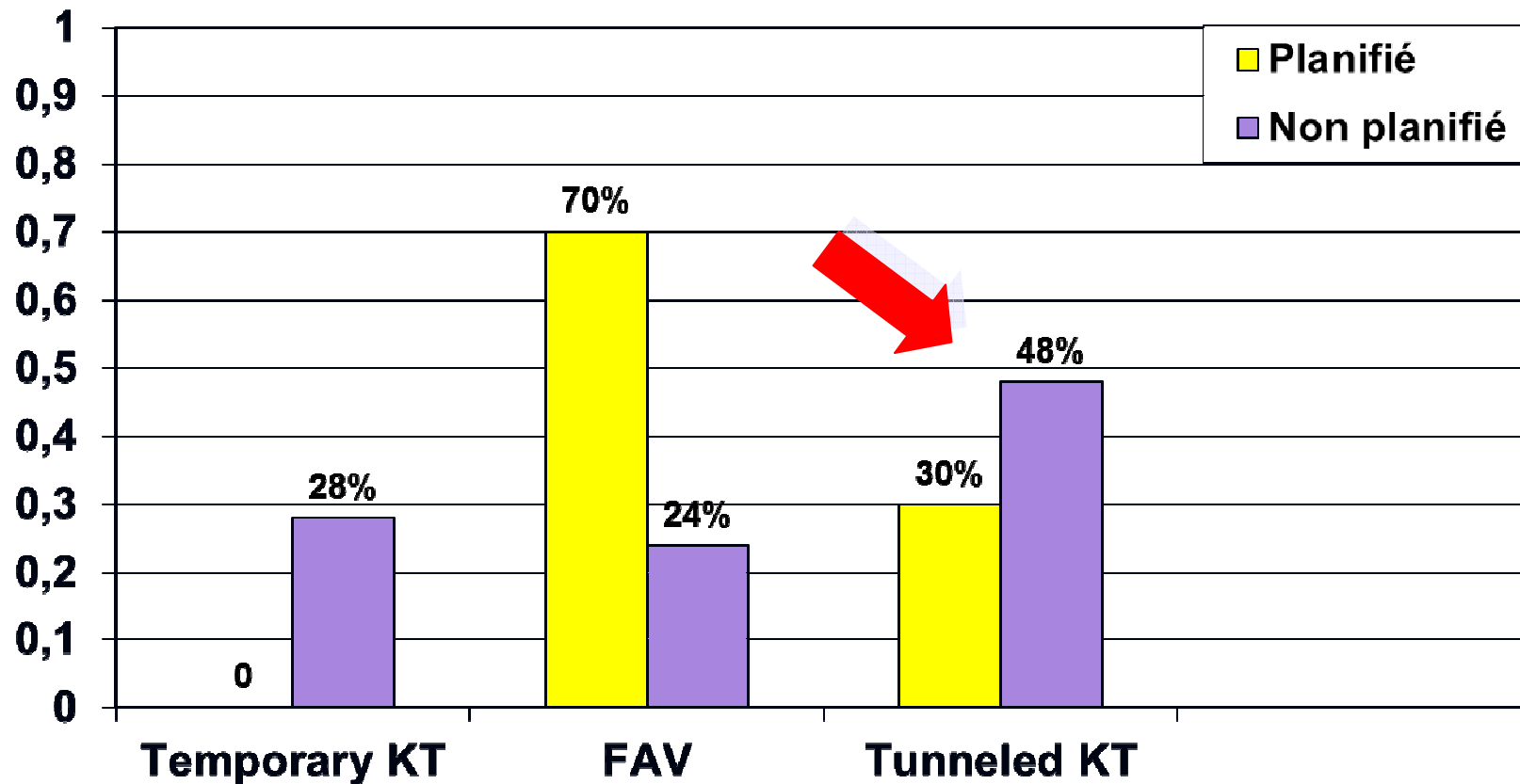
Hemodialysis facility two months after the switch



[L Boissinot, Perit Dial Int]

Vascular access after the transfer on HD

Vascular access after the transition



Risk factor of the unplanned transition

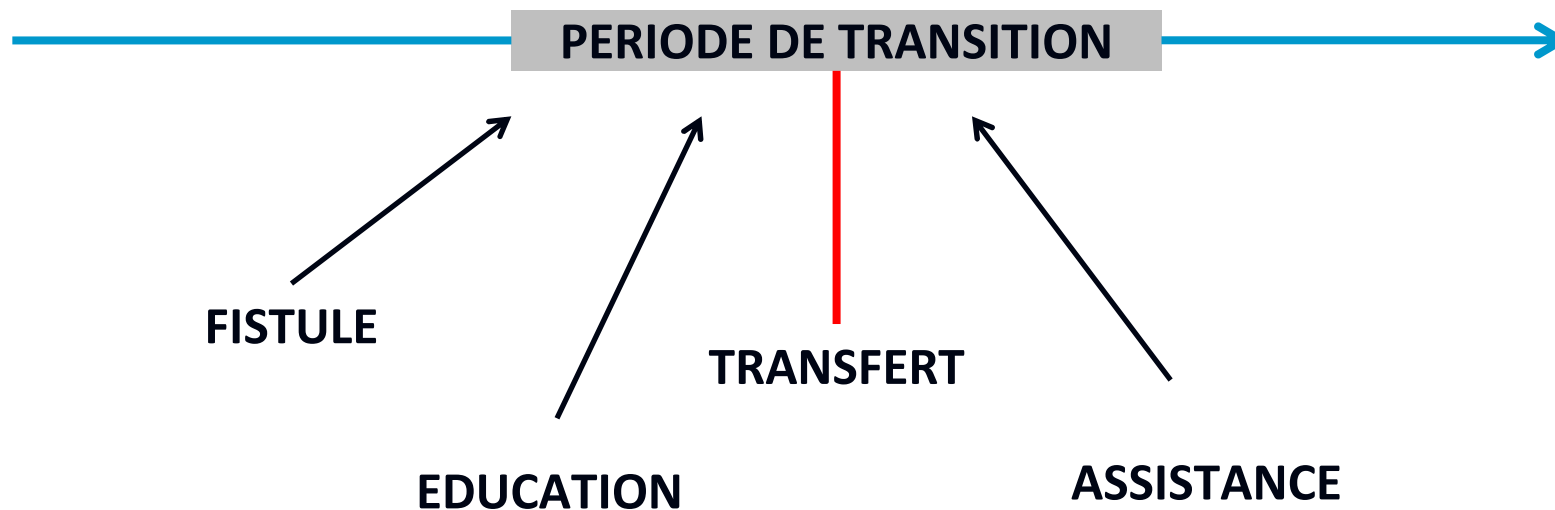
Multivariate analysis for the unplanned HD initiation

Covariate	Odds Ratio	95% CI
Charlson index (unit)	1.05	0.99-1.12
Peritonitis (more than one episode)	1.46	1.11-1.93
PD duration (months)	0.99	0.98-1.00

[L Boissinot, Perit Dial Int, Epub in advance]

Could we improve the transfer on hemodialysis

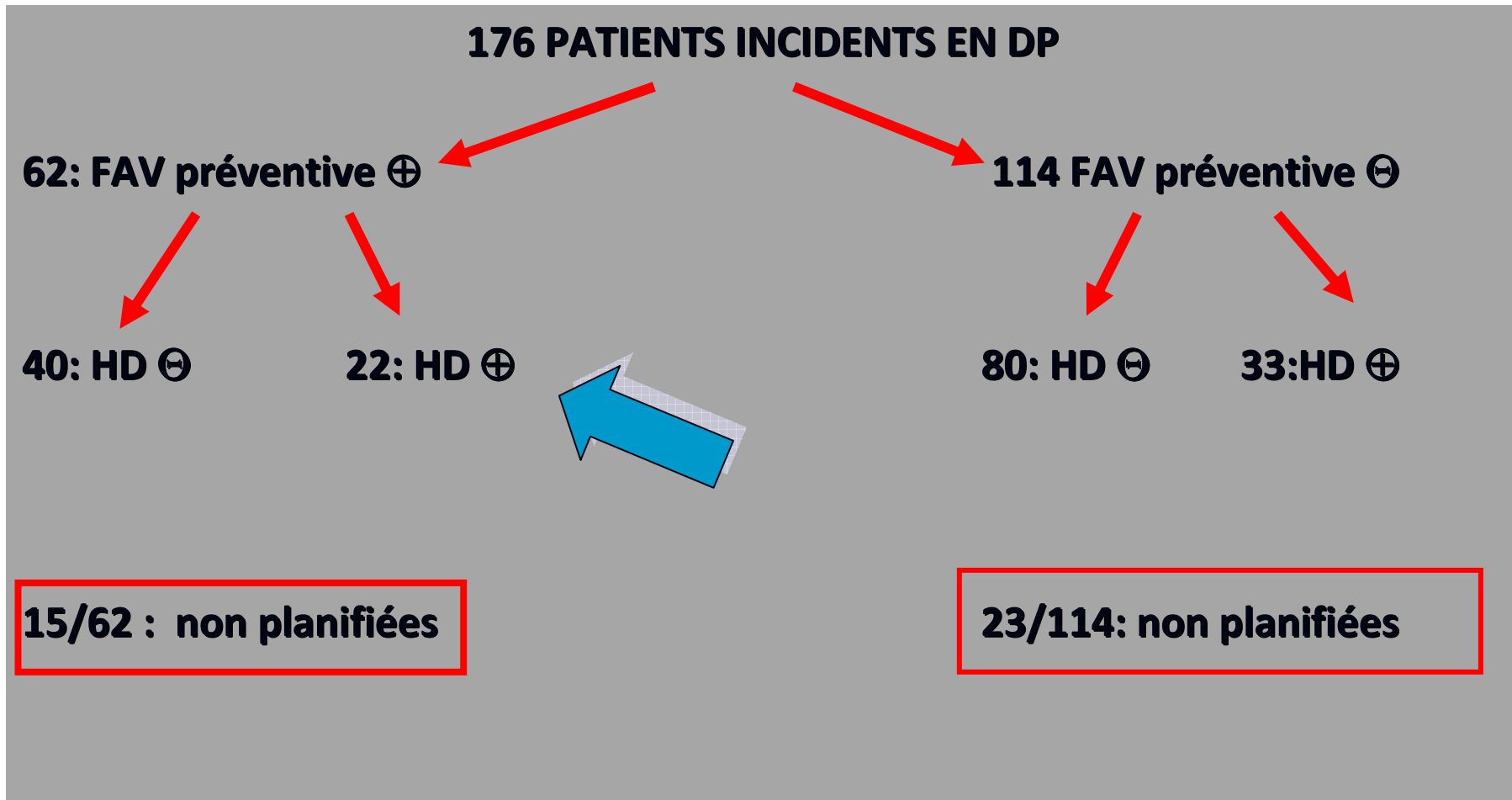
Transition is a period of time rather than a single point



How could we improve the transition ?

3. To create a vascular access in advance

A preemptive vascular access is not mandatory but...is it still true in 2014 ?



[IJ Beckingham, Lancet 1993; 341: 1384-86]

How could we improve the transition

- Identifying those patients who are exposed to EARLY peritoneal dialysis FAILURE
- In an attempt to create a VASCULAR ACCESS for hemodialysis earlier

Early peritoneal dialysis failure in France

Original Article



Early failure in patients starting peritoneal dialysis: a competing risks approach

Clémence Béchade¹,
Lydia Guittet²,
David Evans^{3,4,5},
Christian Verger³,
Jean-Philippe Ryckelynck¹
and Thierry Lobbedez¹

¹Néphrologie, CHU Clemenceau, Caen Cedex, France,

²U1086 Inserm, Université de Caen Basse-Normandie, Faculté de médecine, Caen cedex, France,

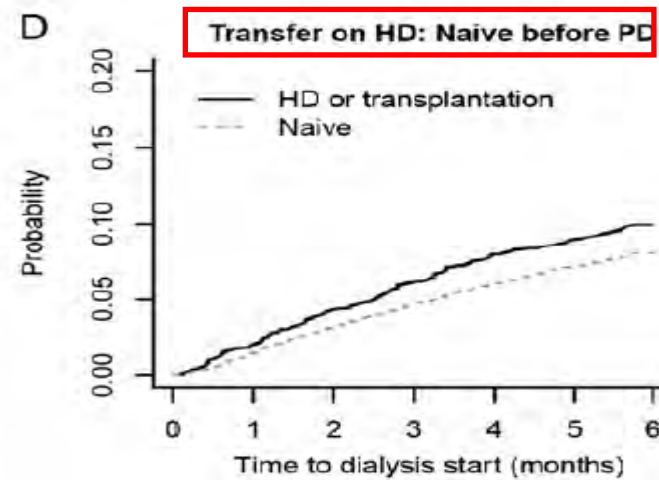
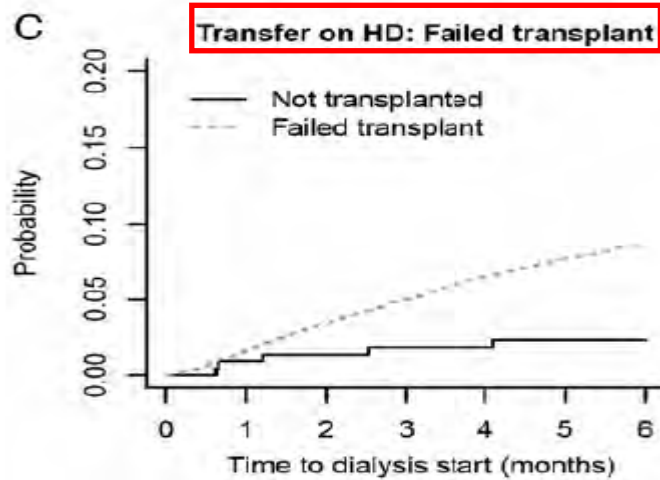
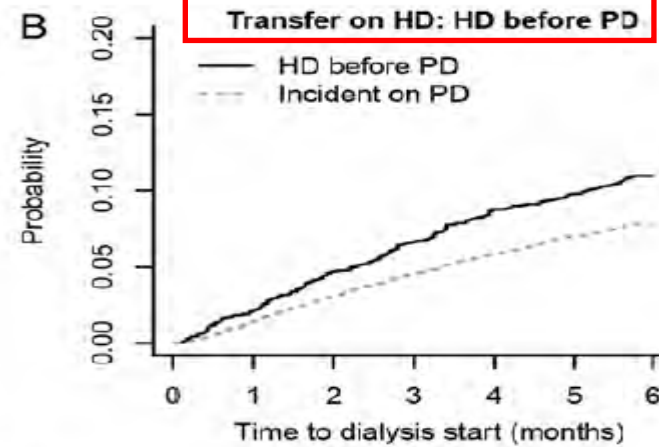
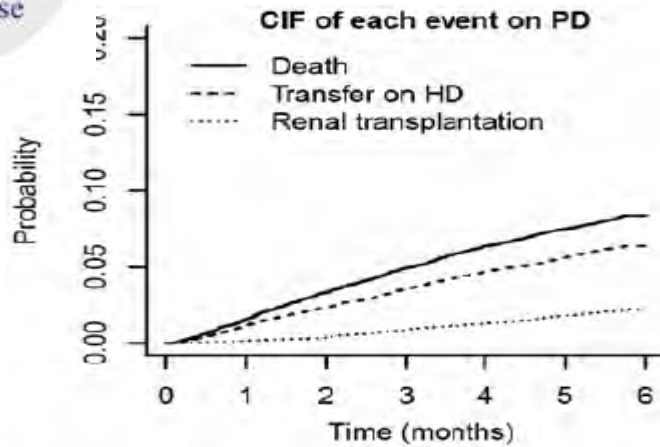
³RDPLF, 30 rue Sere Depoin, Pontoise, France,

⁴Ecole des Hautes Etudes en Santé Publique School of Public Health, Paris, Rennes, France and

⁵Unité Mixte de Recherche Science, Paris, France



Risks factor of early PD failure



[C Bechade, Nephrol Dial Transplant 2013]

Risks factor of the early PD failure

Multivariate analysis [Fine and Gray model]

Covariate	Transfer to HD	
	sd-RH	95% IC
Age (5years)	0.95	0.92-0.98
Modified CCI	0.96	0.90-1.00
Sex (male)	0.95	0.81-1.12
Underlying nephropathy		
Therapy before PD initiation		
Transplantation before PD	2.49	1.69-3.68
No treatment before PD	Ref	
Time in HD before PD (mo)		
0	Ref	
≤3	1.43	1.14-1.80
>3	1.96	1.47-2.60
Center size (new pts per yr)		
<10	Ref	
[10-20]	0.81	0.68-0.96
>20	0.75	0.59-0.96
Assisted PD		
Self PD	Ref	
Family	0.72	0.53-0.98
Nurse	0.94	0.76-1.16
Patients awaiting renal transplantation	0.10	0.07-0.16
Early peritonitis	2.17	1.30-3.61

Suggestions ?..

- **Failed transplant, unplanned PD start, and early peritonitis are risk factor of the EARLY PD FAILURE**
- **PREEMPTIVE VASCULAR ACCESS creation should be considerer as an option for those patients**

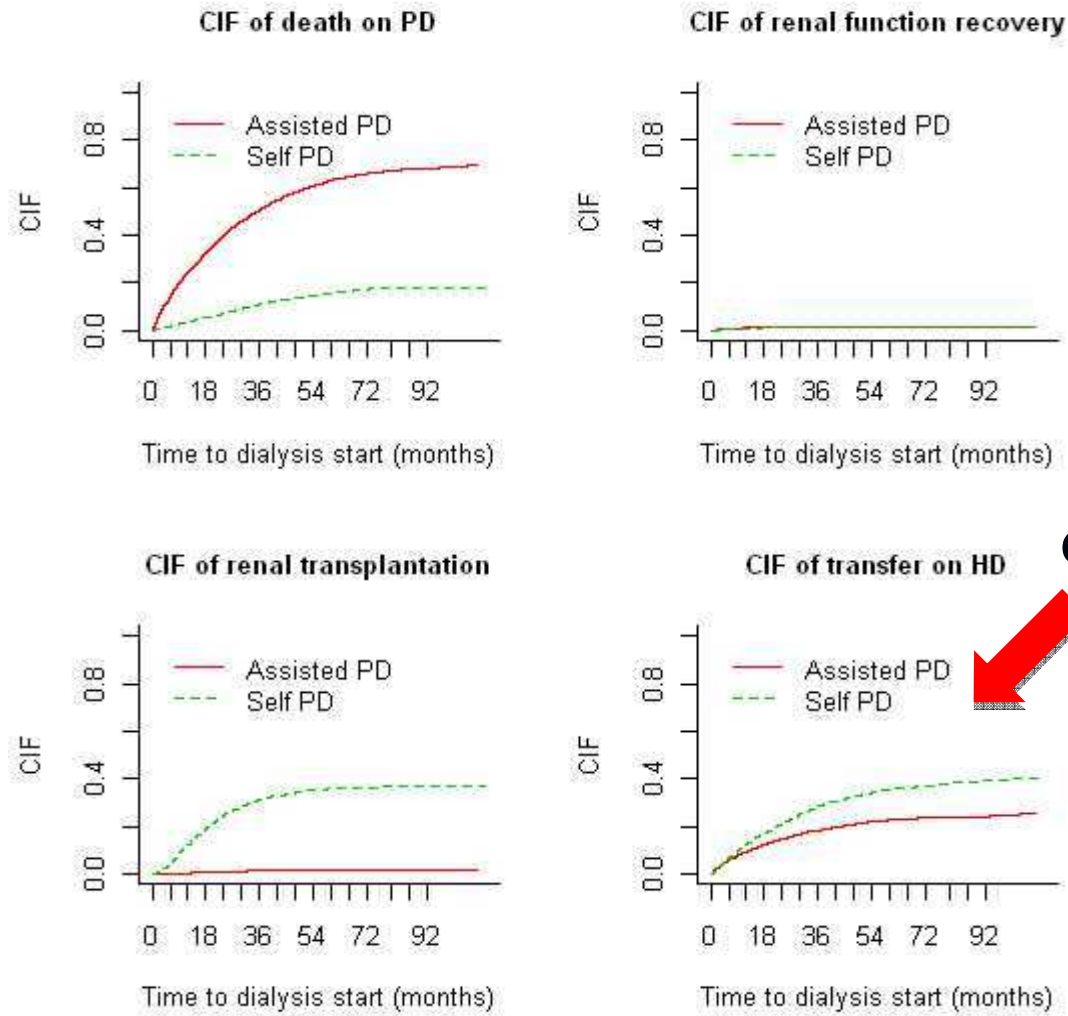
How could we improve the transition period ?

- **By identifying those patients who will be TRANSFERRED LATELY on hemodialysis**
- **Those patients will be exposed to the complications of Peritoneal Dialysis**
- **These patients should be GOOD CANDIDATE for a transfer on hemodialysis**

Factors associated with the late transfer on HD ?

- **Lack of patients assistance**
[main outcome=transfer predictable]
- **Probability to receive a kidney transplantation**
[main outcome= transplantation]
- **The level of comorbidities**
[main outcome=death]

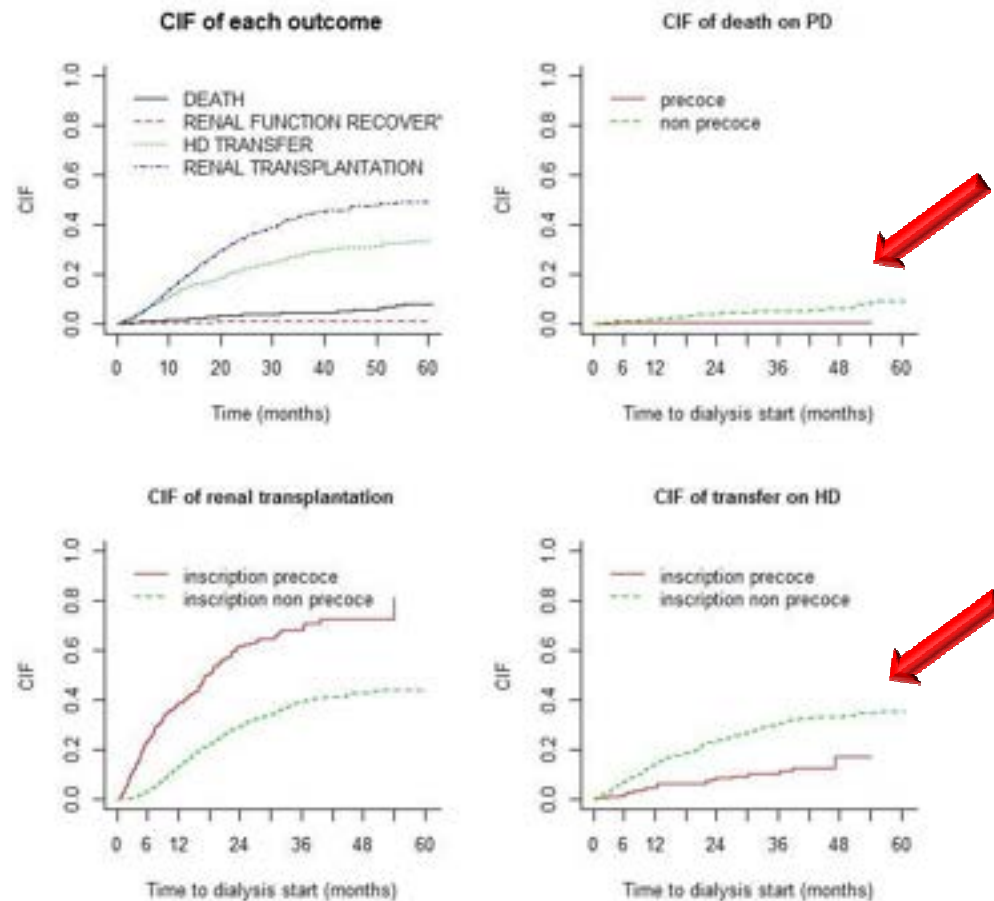
Effect of assisted peritoneal dialysis on PD failure



[T Lobbedez, Clin J Am Soc Nephrol 2012;7:612-618]

Effect of the early registration on the waiting list

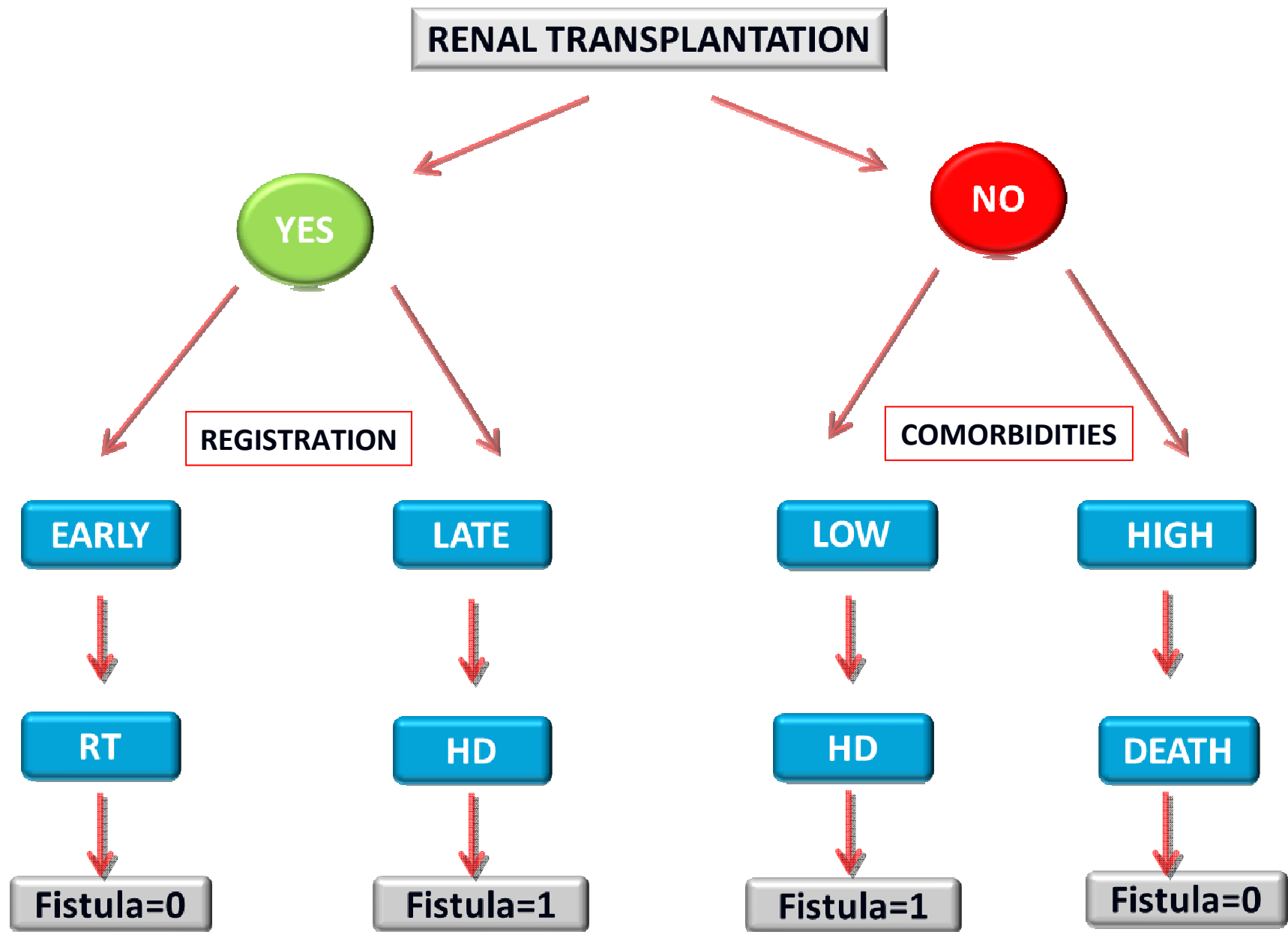
Cumulative incidence of each outcome on PD



Effect of the comorbidity on the technique survival

RISK FACTOR	HR [95% CI]	P
GENDER (male)	1.01 [0.78-1.29]	NS
AGE 75-79 80-84 85-89 >90	Ref 0.97 [0.74-1.27] 0.87 [0.60-1.28] 0.31 [0.11-0.83]	NS
PD MODALITY CAPD APD	Ref 1.54 [1.11-2.13]	<0.05
ASSISTANCE Autonomous Family assisted Nurse assisted	Ref 0.86 [0.48-1.54] 0.93 [0.69-1.24]	NS
MODIFIED CCI 2-3 4-5 >6	Ref 0.85 [0.65-1.11] 0.64 [0.44-0.93]	<0.05
CENTRE SIZE < 20 21-30 > 30	Ref 0.75 [0.51-1.12] 0.56 [0.37-0.86]	<0.05

[C Castrale, Nephrol Dial Transplant 2010]



Transplantation

NO [Cumulative incidence (4 yrs)]	Events on PD	YES [Cumulative incidence (4 yrs)]
53%	Death	6% *
32%	Transfer to HD	24%*
0.1%	Transplantation	45% *

[*: p value <0.001, Gray's test]

Charlson Index

< 4 [CI at 4 yrs]	Event	> 4 [CI at 4 yrs]
26%	Death *	53%
43%	Transfer to HD *	23%
0,1%	Transplantation	0,1%

[*: p value <0.001, Gray's test]

Registration

> 3 months [CI at 4 yrs]	Event	< 3 months [CI at 4 yrs]
10%	Death*	1%
46%	Transfer to HD*	16%
23%	Transplantation*	63%

[*: p value <0.001, Gray's test]

Effect of the center experience on PD failure

Multivariate analysis (Fine and Gray)

Covariate	Sd RH (95%CI)
Age (years)	0.99 (0.99-1.00)
Gender (Male)	1.06 (0.97-1.15)
Modified CCI	1.00 (0.99-1.03)
Underlying nephropathy	0.98 (0.96-1.00)
Failed transplant	1.72 (1.39-2.17)
Transferred from HD	1.27 (1.14-1.40)
Early peritonitis	1.45 (1.06-1.97)
Centre size: > 20 pts per year	0.82 (0.72-0.91)
Family assisted PD	0.81 (0.70-0.94)
Nurse assisted PD	0.72 (0.63-0.81)

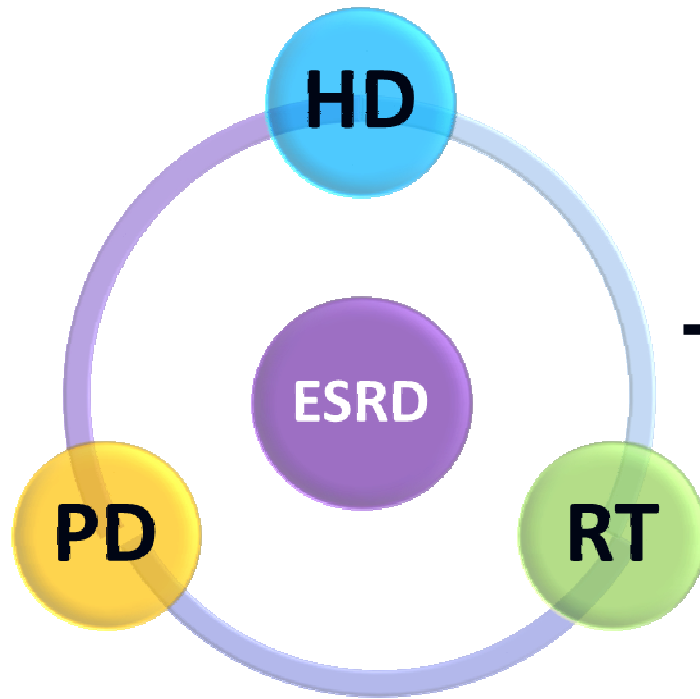
[T Lobbedez, Clin J Am Soc Nephrol 2012;7:612-618]

CONCLUSION

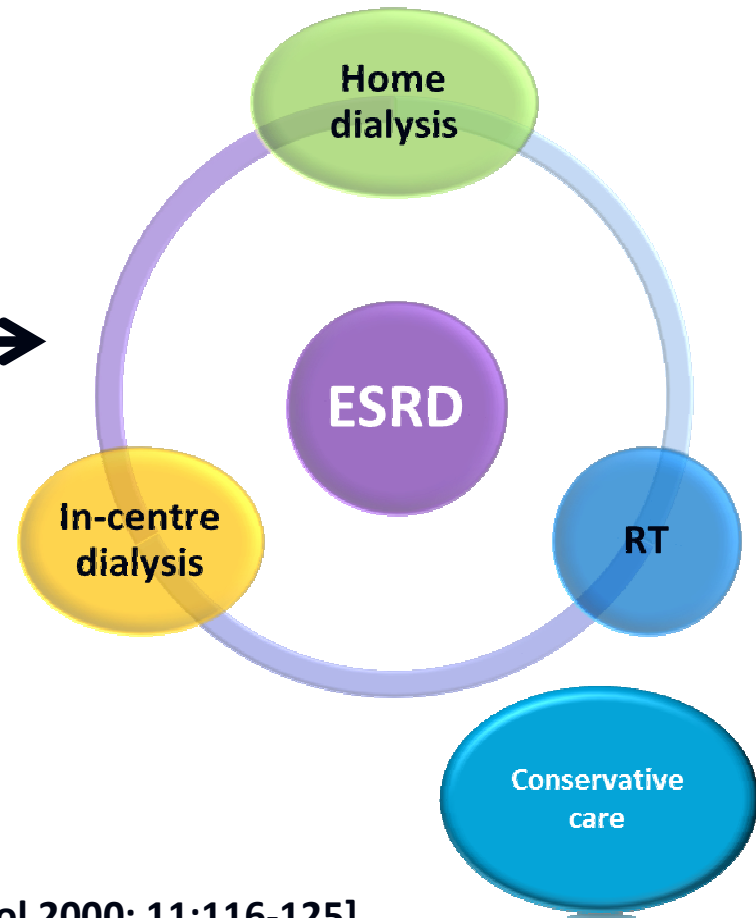
- **L'objectif c'est d'améliorer le passage d'une méthode à l'autre**
- **Ne plus parler d'échec mais de transition thérapeutique**
- **De répondre au concept de prise en charge intégrée optimisée**

The patients care is moving toward a new concept

Integrated care 2000

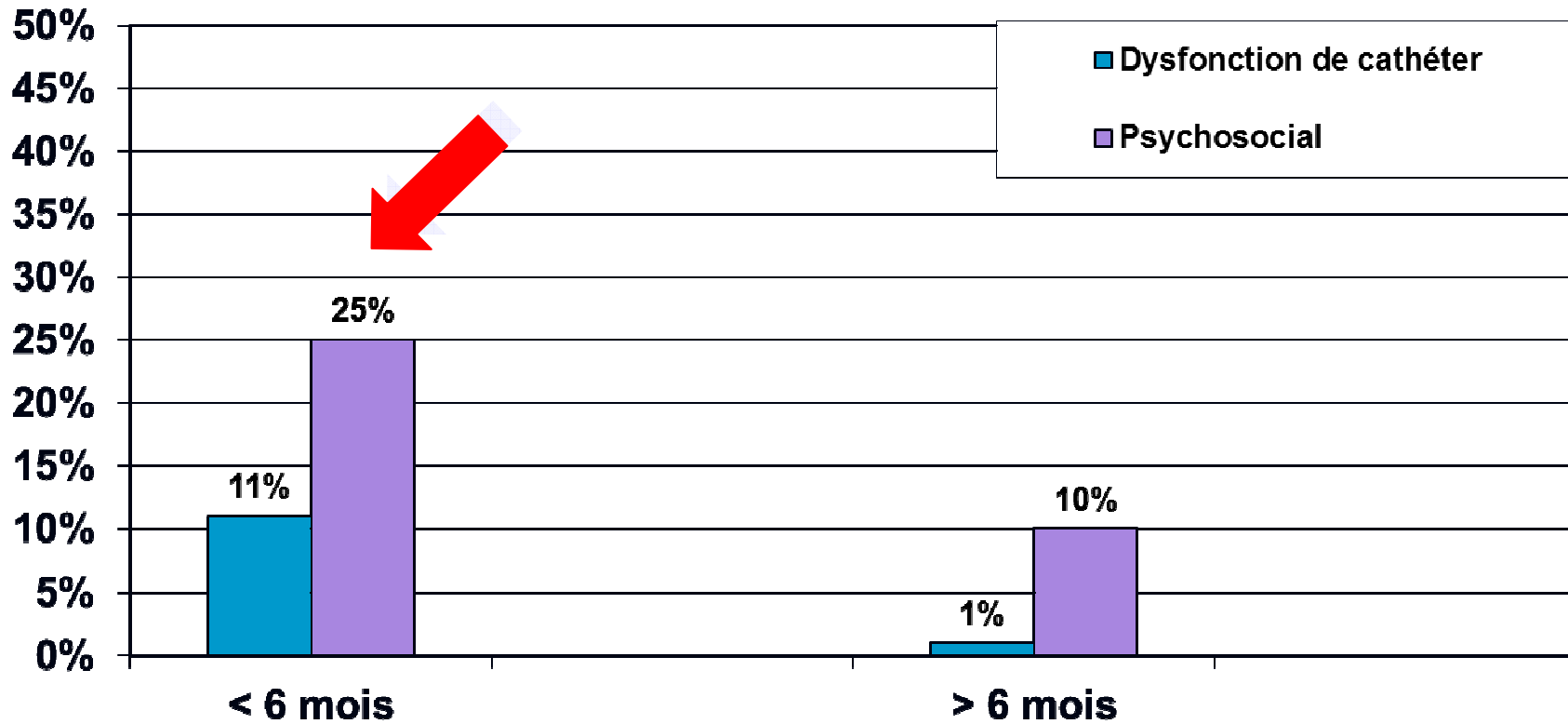


Integrated care 2013



[Van Biesen W, J Am Soc Nephrol 2000; 11:116-125]

Causes of the early transfer on HD



[B Descoedre, Perit Dial Int 2007; 28: 259-267]